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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Werner Bensch

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DENNISON, SCHULTZ & MACDONALD
1727 KING STREET
SUITE 105
ALEXANDRIA, VA 22314

EXAMINER

HU, SHOUXIANG

ART UNIT

PAPER NUMBER

2811

MAIL DATE

DELIVERY MODE

02/03/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,946	Applicant(s) BENSCH, WERNER	
	Examiner Shouxiang Hu	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 5-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/03/06, 10/25/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 5-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 10/16/2008.
2. In addition, claim 2 is also withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being unreadable on the elected species. Claim 2 recites the subject matter that the dividing layer is designed as a metallic contact, which is unreadable on the elected species of the embodiment of Fig. 4.

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.

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(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(g) BRIEF SUMMARY OF THE INVENTION.

(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(i) DETAILED DESCRIPTION OF THE INVENTION.

(j) CLAIM OR CLAIMS (commencing on a separate sheet).

(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Applicant is advised to revive the specification accordingly.

Claim Objections

3. Claims 1, 3 and 4 are objected to because of the following informalities and/or defects:

In claim 1, the term of "active zone AZ1" should read as: --active zone (AZ1)--.

Claim 1 recites the term of "first (lower) active zone", but it fails to clarify whether the first active zone, the lower active zone and "the lowest active zone" are the same active zone. If they are, they should all read as: --lowest active zone--, in order to be consistent with what is referred to later in the same claim. Similar issue also exists in the claim with respect to the term of "additional (upper) active zone".

In claim 1, the term of "the semiconductor materials" lacks a sufficient antecedent basis in the claim.

Claim 1 fails to define where the recited at least one additional (upper) active zone is epitaxially grown.

In claim 1, the term of "somewhat" appears to be indefinite.

Claim 4 lists a group of materials ended with the term of “and/or AlSb”, but it fails to clarify: whether the active zones are formed of a same material or different materials; and, what are the definite relationships between the material(s) of the active zones and the list of materials that is ended with the term of “and/or AlSb”.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 3 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the subject matters of “at least one additional (upper) active zone (AZI - AZn)”, “between the lower active zone (AZ1) and the upper active zone (AZn) one or more additional active zones (AZn) being epitaxially grown”, “previous active zone”, and, “on an active zone (AZn)”. But, it fails to clarify: what are the definite relationships among all these recited active zones; and/or whether the recited “at least one additional (upper) active zone (AZI - AZn)” is a part of the recited “one or more additional active zones (AZn)” or vice versa; and/or whether the term of “an active zone” recited at the end of the claim is definitely the uppermost active zone or it is any of the active zone(s) that is/are above the lowest active zone.

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A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 1 recites the broad recitation of "a multi-wavelength diode that emits or absorbs a defined number of light wavelengths", and the claim also recites "such as a light-emitting diode or photodiode" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

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only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3 and 4, insofar as being in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 102(e) as being anticipated by Wanlass (Wanlass et al., US 2006/0162768 A1).

Wanlass discloses a semiconductor structure (Fig. 12) with active zones in the form of a multi-wavelength diode that can naturally function as a photodiode to absorb a defined number of light wavelengths, comprising:

a substrate (198) with at least two active zones (at least the pn junction portions in 196, 194 and 192), each of which absorbs radiation of a different wavelength, the lowest active zone (196) being grown on a surface of the substrate, the other upper active zones (at least the junction portions in 194 and 192) being epitaxially grown on the lowest active zone, and the active zones (in 196, 194 and 192) being serially connected from the lowest active zone to the uppermost active zone (in 192) via at least one dividing layer (in 206, 204; TUNNEL JUNCTION, which is naturally a tunnel diode with a reciprocally polar np or pn junction) that naturally serves as a low-impedance resistor, one or more additional active zones (in 194) being epitaxially grown between the lowest active zone (in 196) and the uppermost active zone (in 192), the lowest active zone (in 196) having a low energetic band gap and each of the subsequent active zones (in 194 and 192) having a higher energetic band gap than a previous active zone, and the semiconductor materials used for growing or epitaxing the tunnel diodes (206, 204) having an indirect band junction or an energetic band gap, which in each case is higher than the semiconductor materials (in 196) that are used beneath it, wherein an

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absorption layer (the non-junction portion in 194 and/or 192; for example, a lower or bottom portion of the p-type material in 194 and/or 192 can naturally function as a absorption layer to absorb photons of certain wavelengths) having the same material as the pn layer of the active zone is grown on the lowest active zone.

Furthermore, it is noted that any potential process implications regarding how the absorption layer and/or the active zone are formed, and/or whether they are formed in one step or multiple steps, are process limitations, which would not carry patentable weight in this claim drawing to a structure, because distinct structure is not necessarily produced. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 3, the material of the above substrate is InP.

Regarding claim 4, the material of at least one of the above active zones contains GaInP (in 196).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References B-D are cited as being related to multi-wavelength devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shouxiang Hu whose telephone number is 571-272-1654. The examiner can normally be reached on Monday through Friday, 8:30 AM to 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on 571-272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Shouxiang Hu/
Primary Examiner, Art Unit 2811